

Amendment Under 37 CFR 1.111  
U.S. Appln. No. 10/624,608

Docket No.: Q76067

## **AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

### **LISTING OF CLAIMS:**

Claim 1 (currently amended):      A fuel-cell stack comprising a plurality of which  
~~has at least one~~ direct-alcohol fuel cells; the

each cell having a structure comprising:

- a first electrode;
- a second electrode;
- an electrolyte arranged between the first electrode and the second electrode;
- means for conducting electrical current to the first electrode and the second

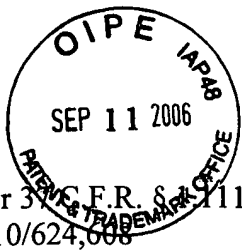
electrode;

~~the second electrode;~~

wherein the entire structure of each cell ~~said structure is~~ miniaturized, made is made of  
superimposed layers, and is up of a plurality of layers set on top of one another and associated in  
an ~~unremovable-irremovable~~ way to a flexible substrate; and

at least one duct is also associated in an irremovable way to the flexible substrate, the  
duct being connected to the plurality of cells for supplying them with fuel.

Claim 2 (canceled).



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Claim 3 (currently amended): The fuel-cell stack according to Claim 1, wherein the flexible substrate is made of polymeric material, ~~in particular Kapton®.~~

Claim 4 (currently amended): The fuel-cell stack according to ~~Claim 2~~Claim 1, wherein an additional duct is also associated in an irremovable way to the flexible substrate, ~~in an unremovable way, are delivery means for delivering a fuel to each cell and discharge means and wherein the additional duct is connected to the plurality of cells for emptying water from~~ each cell.

Claim 5 (currently amended): The fuel-cell stack according to ~~Claim 2~~Claim 1, wherein associated to the flexible substrate in an irremovable ~~unremovable~~ way are conducting paths, which electrically connect each cell to the next one.

Claim 6 (currently amended): The fuel-cell stack according to Claim 1, wherein the means for conducting electrical current comprise a first layer of metallic material resting on the flexible substrate and ~~in that~~wherein the first electrode comprises an anodic catalyst in contact with said first layer.

Claim 7 (currently amended): The fuel-cell stack according to Claim 1, wherein the means for conducting electrical current comprise a second layer of metallic material resting

on the electrolyte and ~~in that~~wherein the second electrode comprises a cathodic catalyst in contact with said second layer.

Claim 8 (currently amended): The fuel-cell stack according to Claim 7, wherein on said second layer there is present a protective layer, ~~in particular made of polymeric material.~~

Claim 9 (currently amended): The fuel-cell stack according to Claim 1, wherein the electrolyte is in the form of a membrane, ~~in particular made of Naphion.~~

Claim 10 (currently amended): The fuel-cell stack according to Claim 1, wherein the electrolyte has a composite structure comprising ~~Naphion and~~ zeolite.

Claim 11 (currently amended): The fuel-cell stack according to Claim 1, wherein the means for conducting electrical current to the first electrode and the second electrode are in the form of metallic layers.

Claim 12 (currently amended): The fuel-cell stack according to Claim 1, wherein at least one between the first electrode and the second electrode comprises a catalyst containing granules of carbon and a noble metal selected ~~in~~ from the group consisting of platinum, palladium, rhodium, iridium, osmium and ruthenium.

Claim 13 (currently amended): The fuel-cell stack according to Claim 1, wherein at least one between the first electrode and the second electrode comprises a catalyst containing a material selected ~~in~~ from the group consisting of fullerenes, carbon nanotubes, carbon nanofibres.

Claim 14 (currently amended): The fuel-cell stack according to Claim 1, wherein at least one between the first electrode and the second electrode comprises a catalyst deposited on zeolite material.

Claim 15 (currently amended): The fuel-cell stack according to Claim 1, wherein it comprises a first control part and a second energy generation part, the first part having a micro-pump, which is operative for regulating the supply of the fuel to the cells, the micro-pump comprising:

- a respective inlet branch, for connection to a source of the fuel; and
- a delivery branch, for connection to the delivery means.

Claim 16 (currently amended): The fuel-cell stack according to Claim 15, wherein the micro-pump is ~~of the a piezoelectric micro-pump type~~ and made using MEMS (Micro Electro-Mechanical Systems) technology.

Claim 17 (currently amended): The fuel-cell stack according to Claim 15, wherein the micro-pump is operative for maintaining the cells moist in order to prevent deterioration of said miniaturized structure.

Claim 18 (currently amended): The fuel-cell stack according to Claim 15, wherein the first part comprises a microcontroller for the control of the micro-pump.

Claim 19 (currently amended): The fuel-cell stack according to Claim 15, wherein the first part comprises a supercapacitor provided for electrical connection to a cell.

Claim 20 (currently amended): The fuel-cell stack according to Claim 19, wherein the supercapacitor is operative for supplying the microcontroller with electrical energy.

Claim 21 (currently amended): The fuel-cell stack according to Claim 15, wherein the second part comprises the flexible substrate with the respective cell or cells, and that the first part is distinct from the flexible substrate and provided for being connected electrically and hydraulically to a cell of the second part.

Claim 22 (currently amended): The fuel-cell stack according to Claim 1, wherein the flexible substrate is in the form of a ribbon developing in length and capable of being rolled up.

Claim 23 (currently amended):      The fuel-cell stack according to Claim 1, wherein the fuel is methanol in aqueous solution.

Claim 24 - 30. (canceled).

**Kindly add the following new claims:**

Claim 31 (new):      The fuel-cell stack according to Claim 3, wherein the polymeric material is an insulating polyamide material.

Claim 32 (new):      The fuel-cell stack according to Claim 8, wherein the protective layer is made of a polymeric material.